

**DYNAMICALLY AMPLIFIED MICROMACHINED VIBRATORY ANGLE MEASURING
GYROSCOPES, MICROMACHINED INERTIAL SENSORS AND METHOD OF
OPERATION FOR THE SAME**

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Abstract of the Disclosure

A micromachined angle measuring gyroscope using a dual mass architecture measures angular positions rather than angular rates. The invention decouples the effects of drive and sense through the use of a dual mass architecture, and is comprised of a single lumped drive mass, which is structurally coupled to a second lumped slave mass, where the drive mass is electrostatically driven at the first resonant frequency the system using parallel plate electrodes. The slave mass is driven to higher amplitudes than the drive mass. In the presence of rotation, the line of oscillation in both masses precesses, which is easily detectable in the slave mass due to the amplified motion, and is exactly equal to the angle of rotation. The two illustrated embodiments are z-axis realizations of this principle, where the first device uses an inner drive/outer sense architecture and the second uses an outer drive/inner sense architecture.